

Visual Acuity



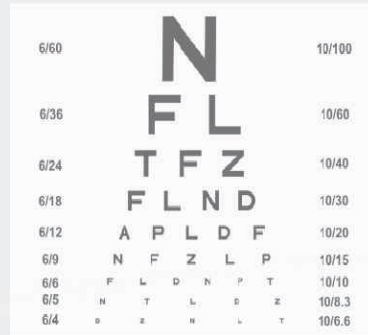
AKAS

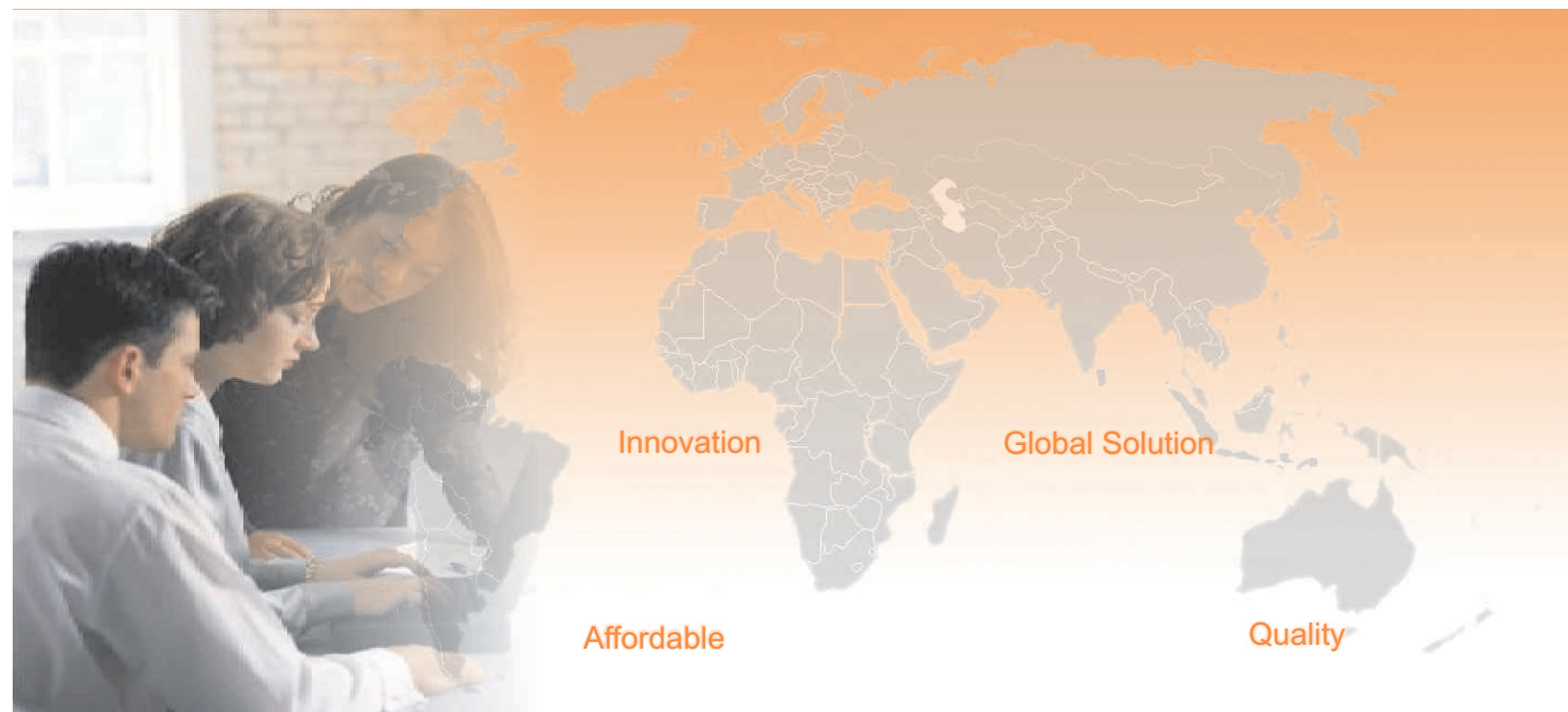
Will ensure Health care is
affordable and available for every one

AKAS

Caring 6 billion people

An Experience





About AKAS Medical

AKAS Medical was started in 1996 as a small firm with a team of professionals headed by Mr.Arjunsooraj.V, CEO. The techonology and product innovation is headed by Mr.Arunkrishna.V. The promoters are qualified engineers and Management graduates with shared Vision.

AKAS started with manufacture of drug delivery systems and now has grown many folds in the field of Ophthalmology, Critical Care, Disposables, Nutrition, Online Medical stores (www.akasdoctor.com)

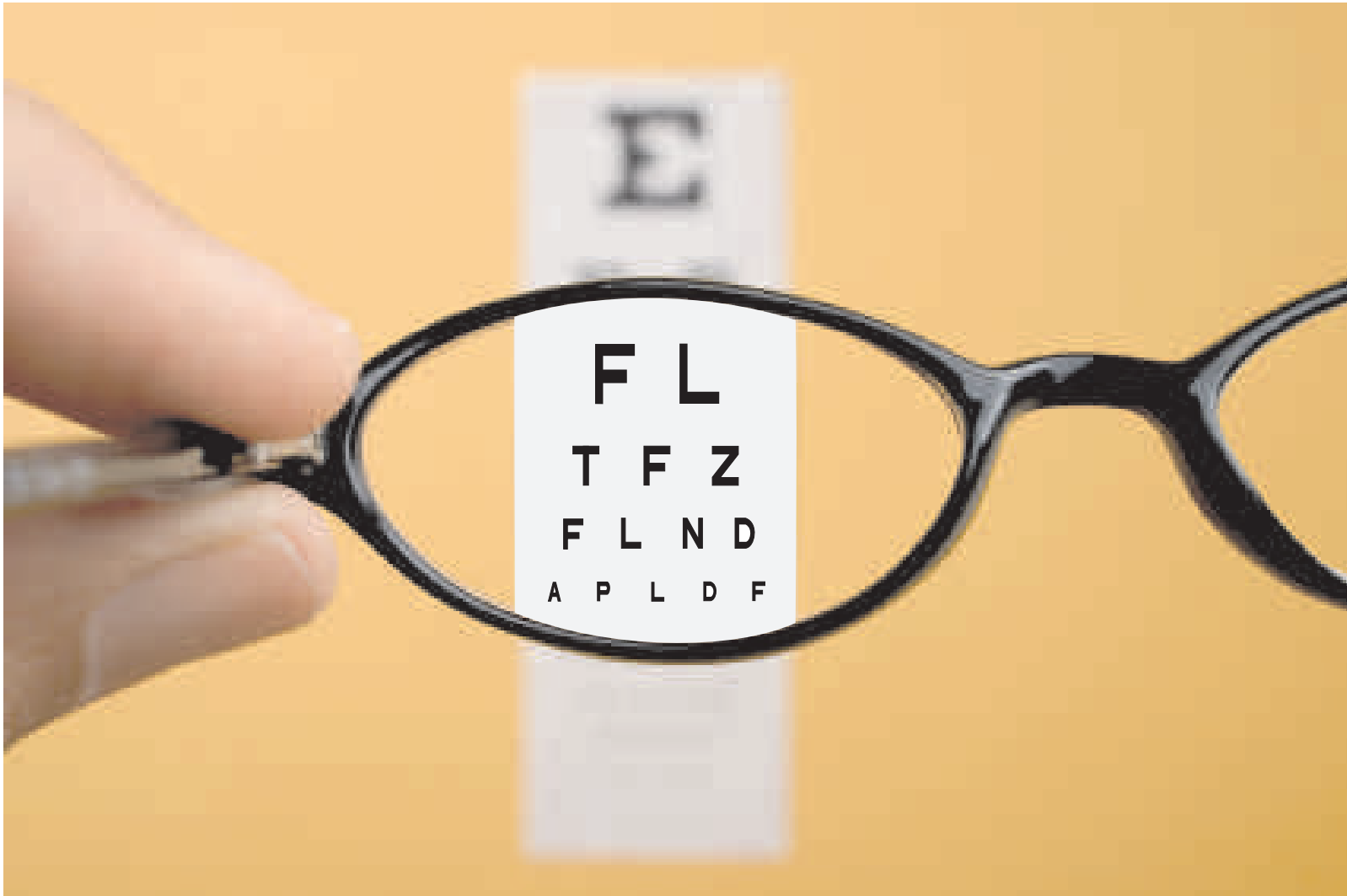
Today AKAS Medical has its head office at Chennai in India and manufacturing plants and marketing offices at various locations globally. It has grown through sheer expertise and knowledge sharing in the field of medicine and technology.

AKAS Medical other than following the ISO 9001 quality management system has itself developed a quality management system apt for the medical devices quality and has named it as "AKAS Quality System" (AQS in short).

AKAS pays lot of importance on Safety on the therapeutic and diagnostic products that it manufactures. Today AKAS Products and solutions are accepted world wide by the medical fraternity.

AKAS believes in being socially responsible and stand by its mission to make health care affordable and available for everyone. AKAS believes in not just selling products but in offering solutions on the whole and also in education of its customers to enhance their experience in availing AKAS products.

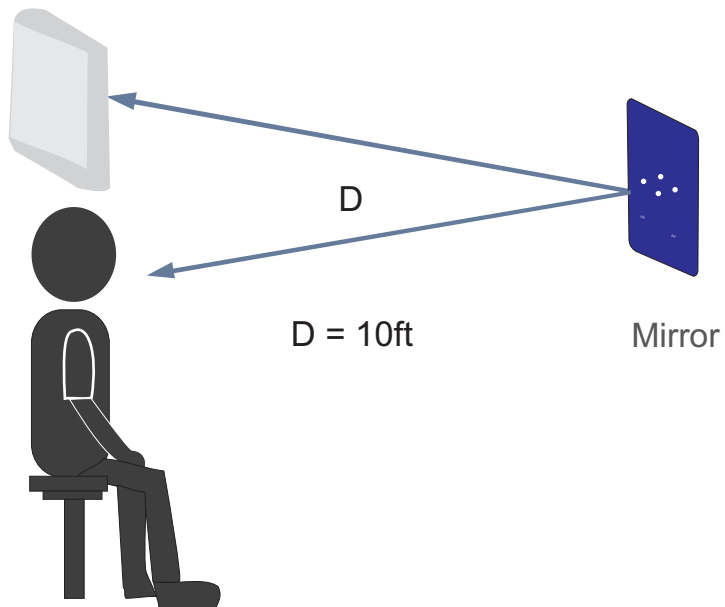
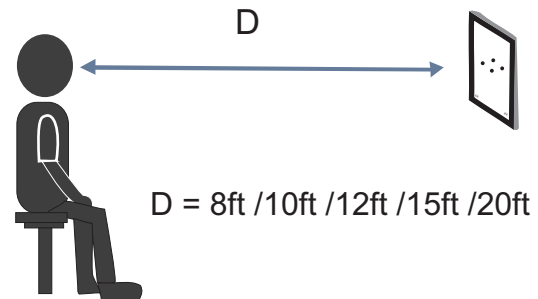
Distance vision chart



Distance vision

Optional Testing Distance

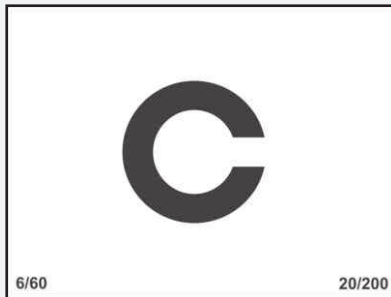
Various testing distance are available to accommodate along the size of your refraction room (3m Straight and less reverse is recommended)



Reliable Chart for Mirror System

If the installation distance is limited, the reversible chart and a mirror will chart the test distance by half.

Landolt C



A Landolt C, also known as a Landolt ring or Landolt broken ring, is an optotype, i.e. a standardized symbol used for testing vision. It consists of a ring that has a gap, thus looking similar to the letter C. The gap can be at various positions (usually left, right, bottom, top and the 45° positions in between) and the task of the tested person is to decide on which side the gap is. The size of the C and the break are reduced until the subject makes a random rate of errors. The minimum angle of the break is judged as the visual acuity. It is generally practiced in the laboratory.

Advantages of Landolt C rings :

- 1) It lends itself to a forced choice response. The four positions are produced by rotating the target around a fixed point. This minimizes artifacts and secondary cues.
- 2) For an eye which yields a radially uniform image of a point, the relation to blur is the same for all positions of the ring.
- 3) It makes proper allowances for astigmatic refractive errors
- 4) It has already been widely used for assessing impaired vision and performance of tasks.

Tumbling E

E chart is useful for patients that are illiterate or too young to read but who can speak. It contains rows of the letter "E" in various kinds of rotation. The patient is asked to state where the limbs of the E are pointing "up, down, left or right." Depending on how far the patient can read his or her visual acuity is quantified. In principle it is just the same as Snellen's distant vision chart.



AVA numbers



AVA Numbers adhere to Sloan Optotype standards

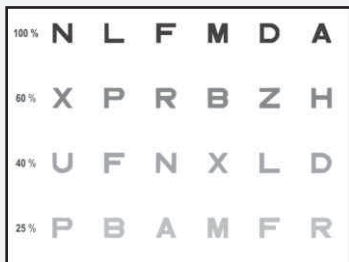
AVA Numbers optotypes are highly calibrated to Sloan optotypes and are considered reliable and accurate. AVA Numbers are great for universal testing with patients that are not familiar with the Roman alphabet. AVA Number Near Point card is great for screening vision in multiple countries.

AVA Numbers are a great alternative vision chart for testing in multiple languages. Even though the patient may not be familiar with the Roman alphabet, often times they will be familiar with numbers. Also, the use of a number chart provides the patient the possibility to simply sign the number they are seeing.

Use of AVA Numbers :

Use to test some preliterate children, because they may learn or recognize numbers quicker than letters.

Contrast Sensitivity



Contrast sensitivity refers to the ability of the visual acuity system to distinguish an object from its background. It is purely a qualitative test which tests the functional vision or how well an individual sees everyday visual objects or scenes.

Visual acuity measures the ability to recognize small objects with high contrast. Often however, the visibility of objects in our environment is limited more by lack of contrast than by their small size. Consider the pedestrian who misses a curb or step, or the driver who did not detect a pedestrian on a dark road. In many surveys, contrast sensitivity is the visual parameter that is most closely related to problems experienced in activities of daily living (ADL).

Like visual acuity, contrast sensitivity loss is not disease specific. Like visual acuity, it can be affected by optical problems (refractive error, opacities) that prevent the projection of an adequate image on the retina. It can also be affected by disorders of the outer retina (such as macular degeneration), which prevent part of the image from being detected. Some longitudinal studies suggest that it is a good predictor of acuity loss in the next five years. Finally, contrast sensitivity loss can be caused by neural problems that interfere with adequate processing of the visual information. Neural problems might occur in the inner retina (glaucoma), the optic nerve (optic neuritis), or in the brain and visual cortex.



Normal eye



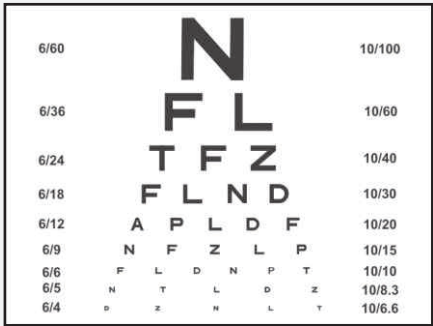
Affected eye

Regardless of the cause, the consequences of contrast sensitivity loss are significant, since many Activities of Daily Living (ADL) involve objects of less than optimal contrast. Patients with contrast problems often notice that something is wrong, but they cannot pinpoint it. They become frustrated patients when told not to worry because their high-contrast visual acuity is normal. A simple contrast test could have identified the problem. Once warned, the patient can take preventive action, such as avoiding night driving and other low-contrast situations. Warning the patient about steps and curbs may avoid a fall and thus a broken hip. Providing better contrast and better illumination in the home can also improve many tasks.

Pelli robinson chart determines the contrast required to read the letters by altering the contrast of the chart. This chart uses the letter of same size corresponding to 0.03 logmar at the test distance of 1 meter.

Snellen

Snellen's Acuity = $\frac{\text{Test distance}}{\text{Letter size read}}$



A standard eye chart is necessary to make comparisons and to record people's visual acuity. The most common chart used in most doctors' offices is the Snellen eye chart. In 1862, a Dutch Ophthalmologist, Dr. Hermann Snellen, devised this eye chart. He determined that there was a relationship between the sizes of certain letters viewed at certain distances. A copy of the Snellen chart may be found [here](#).

When checking visual acuity, one eye is covered at a time and the vision of each eye is recorded separately, as well as both eyes together. In the Snellen fraction 20/20, the first number represents the test distance, 20 feet. The second number represents the distance that the average eye can see the letters on a certain line of the eye chart. So, 20/20 means that the eye being tested can read a certain size letter when it is 20 feet away. If a person sees 20/40, at 20 feet from the chart that person

can read letters that a person with 20/20 vision could read from 40 feet away. The 20/40 letters are twice the size of 20/20 letters; however, it does not mean 50% vision since 20/20 sounds like it is one half of 20/40. If 20/20 is considered 100% visual efficiency, 20/40 visual acuity is 85% efficient. If a patient sees 20/200, the smallest letter that they can see at 20 feet could be seen by a normal eye at 200 feet. This is the Snellen Acuity (English). In Metric Acuity, 20/20 equals 6/6. The conversion is that 20 feet equals approximately 6 meters (actually 6.096).

<u>Metric</u>	<u>Snellen</u>
6/3	20/10
6/4.5	20/15
6/6	20/20
6/7.5	20/25
6/9	20/30
6/12	20/40
6/15	20/50
6/30	20/100
6/60	20/200

For people who have worse than 20/400 vision, a different eye chart can be used that measures beyond 20/400 vision, or, for the most accurate measurements, a Low Vision Chart can be moved closer to the patient to measure the smallest letter that they can see at a lesser distance. It is common to record vision worse than 20/400 as Count Fingers (CF at a certain number of feet), Hand Motion (HM at a certain number of feet), Light Perception (LP), or No Light Perception (NLP). The conversion of Snellen Acuity to Count Fingers Acuity is as follows:

20/800	CF10' (Count Fingers at ten feet)
20/1000	CF 8'
20/1143	CF 7'
20/1333	CF 6'
20/1600	CF 5'
20/2000	CF 4'
20/2666	CF 3'
20/4000	CF 2'
20/8000	CF 1'

Prescriptions for eyeglasses are measured in diopters. The measurement starts at zero ("plano"), with four quarters to a diopter: 0.25 (a quarter diopter), 0.50 (one half a diopter), 0.75 (3/4 of a diopter), and 1.00 (one diopter). The higher the numbers, the higher (stronger) the prescription.

Here are estimates for the approximate correction needed for each line seen on the Snellen chart:

<u>Snellen</u>	<u>Estimated prescription</u>
20/10	Plano (zero)
20/15	Plano
20/20	Plano to -0.25
20/30	-0.50
20/40	-0.75
20/50	-1.00 to -1.25
20/100	-1.75 to -2.00
20/200	-2.00 to -2.50

This estimation works best for myopia (nearsightedness) because hyperopic (farsighted) people can focus and compensate for a certain amount of their prescription. The Snellen fractions cannot be used for ordering a pair of glasses or contacts that will correct a person's vision.

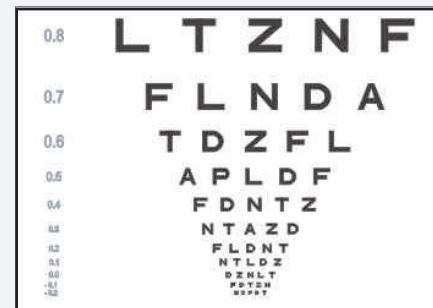
Legal Blindness is when a person's best-corrected vision is 20/200 or worse. If a person is legally blind, they can qualify for tax breaks and certain federal and state social services, such as help in purchasing magnifiers and other low vision aids.

Test distance is the distance at which the letter is held. Letter size represents the distance at which this letter must be held to enable the patient with normal vision to read. Note that the letter size is a physical characteristic of the letter and does not vary with the testing distance.

LOGMAR

The logmar chart was proposed by Bailey and Lovie in 1976. The characteristics of the logmar charts is given below

1. The same numbers of letters at each size level, i.e 5 letters in each row were proposed. Thus the sizes of the letters become the only significant variable when changing from one size level to the next.
2. A logarithmic size progression in a constant ratio from one size row to the next.
3. Spacing between the letter and between the rows proportional to the letter size.
4. Equal or similar average legibility for the optotypes at the each size level.
5. Logmar chart is a direct chart and cannot be used in the mirror.



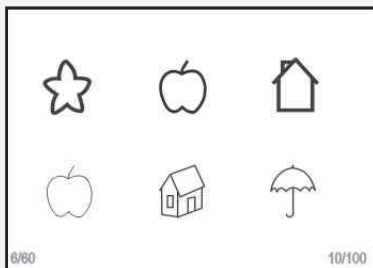
Optotypes used: Sloan and the british letter families are widely used today for visual acuity charts. Both consist of 10 letters that were originally selected from each family.

The Sloan's letters are C,D,H,K,N,O,R,S,V,Z and their dimensions are 5x5

The british letters are D,E,F,H,N,P,R,U,V,Z and their dimensions are 5x4

In the logmar chart , the letter subtends an angle of 5 minutes of arc.

Pediatric

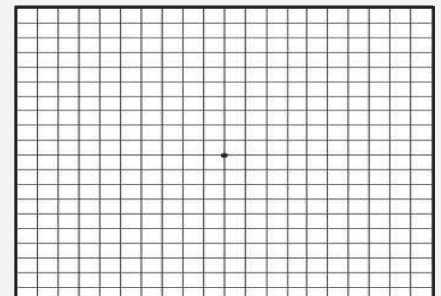


Lea symbols charts: This is the most acceptable vision testing method in children on this 3 to 6 years age group. The chart has pictures or symbols like a square, circle , a cottage or hut and an apple or berry. This can be used with the most uncooperative ones, slow learners, deaf and dumb ones.

The assessment should begin by making the atmosphere most friendly and in a playful manner. A child who can describe these pictures should be first communicated properly as to the name of the symbol, then pointed out one by one and asked to identify

Amsler grid

The amsler grid is a near point of central 10 degree of vision . It is valuable for determining the position and size of central scotomas. It was originally developed by Mr. Marc Amsler to allow patients to test their own central vision for early signs of macular degeneration, so that it may be treated sooner. The test consists of a white grid of small boxes on a black background and is used to determine the location of extent of central scotomas. direction in which the patient should view eccentrically.





Normal eye



Affected eye

The test consists of evenly spaced horizontal and vertical lines printed on black and white paper. A small dot is located at the centre of the grid for fixation. This test is especially helpful for monitoring vision at home. It reveals the macular functioning

And also records distortions on a grid, on the basis of which patient's reading ability with magnifiers can be predicted.

How the chart is used ?

1. Hold the grid at normal reading distance (16 inches), and cover one eye at a time.
2. Look at the center dot in the grid.
3. While staring at the central spot, see if there is any distortion of lines, or any missing lines on the chart. Be sure that the spot itself does not disappear when looked directly at.
4. If there is an abnormality or a change in an existing abnormality when observing the grid, report this to your eye physician.

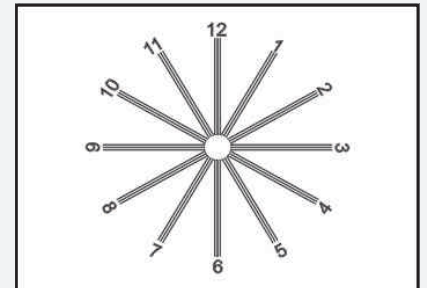
Close one eye and then the other one, if you do not see all the lined squares, in the same black color, if you do see one or more squares grey, you than have an astigmatism.

Astigmatism occurs when the curvature of the cornea is not perfectly round in all directions. In one direction (or axis) the curvature is greater (steeper), and in the opposite direction is is lesser (flatter).

Astigmatism

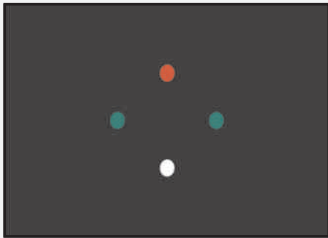
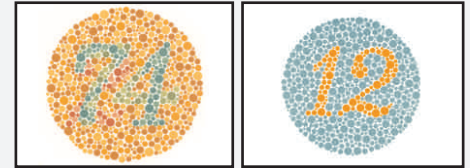
To test your vision, place the chart in a well illuminated area and stand 6 meters (or about 20 feet) from the chart. Test one eye at a time. If you see lignes grey and other black you have an astigmatism.

Affected eye



Isihara

Isihara test is used to test the colour blindness. The person is allowed to observe the standard 7 colour palettes and the colour blindness is diagnosed as per the table given below.

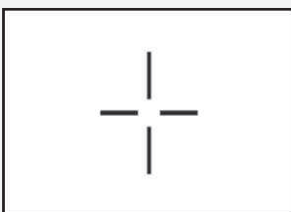
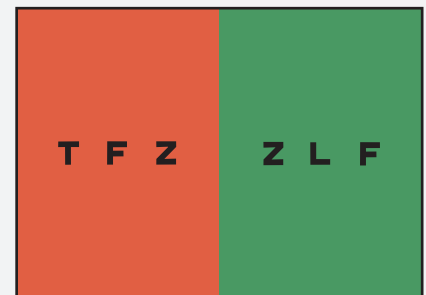


Worth four dot

The Worth 4 dot provides a quick check for suppression. In this implementation the patient wears red / green spectacles (provided) and is asked how many dots they can see. 4= binocular, 3 = Left suppression, 2= Right suppression.

Duochrome

The duochrome test provides a rapid method for assessing patients' refractive status. This test allows various targets and optotypes to be presented against a duochrome background.



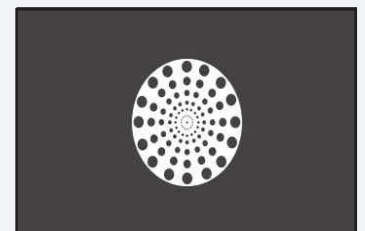
Phoria

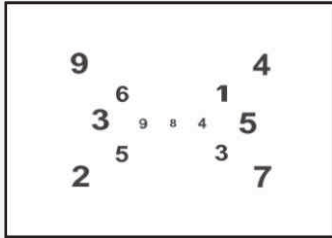
The lateral phoria test as far position indicates the position of the visual axes when fusion is not present and accommodation is at rest. If over convergence exists, the condition is called esophoria, and the finding is recorded after "Esophoria" on Line 55; if under convergence exists, the condition is called exophoria, and the finding is recorded after "Exophoria" on the form. If the finding is at zero or between zero and one, the condition is orthophoria and no record needs to be made.

The vertical phoria test indicates whether one eye perceives images higher than the other does. The card is designed so that one eye sees the line of dots, and the other eye, the scale. The measurement is to find out where the horizontal line of dots crosses the scale.

Cross cylinder

A range of targets are included for use during the cross-cylinder test. Targets include rings and dots of different sizes, which may be shown singly or in pairs.



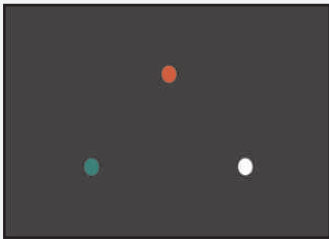


Peripheral acuity

This test is used to test the acuity of a person along the edges. This disorder occurs due to the grain of the retina becoming progressively coarser from the fovea to the periphery. This is caused by the decreasing number of retinal receptive fields and decreasing amount of cortex devoted to each degree of visual field (= cortical magnification factor) as one goes into the periphery. We simulate this with a picture that is progressively blurred towards its edges; when strictly fixated at its centre it looks equally sharp all over.

Vernier acuity

This test has been shown to be useful in assessing the potential vision of patients with cataracts. Simply measure the minimum displacement required for the patient to detect that the two bars are mis-aligned.



Street light driving test

This test is carried out in conjunction with the polarised screen. Amber is seen binocularly while red and green are seen by the right and left eyes respectively. This provides a quick test for suppression.

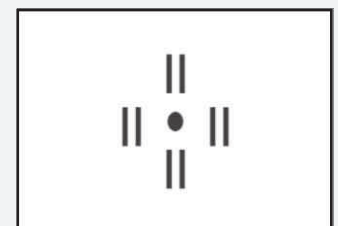
Single letter chart

It is sometimes easier to show a single letter, particular when dealing with children and those with learning difficulties. The size of the letter can be changed in 0.1 logMAR steps and crowding bars can be added. A wide range of optotypes can be displayed in single letter format

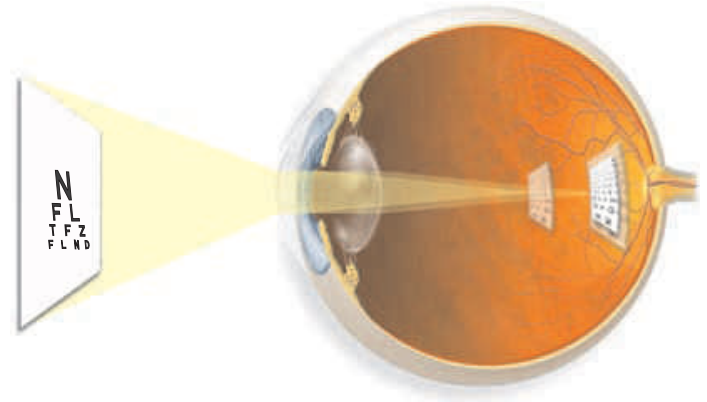


Stereopsis

Lang Stereotest was created to simplify stereopsis screening in children. It is based on two principles: random dots and cylindrical gratings. Lang Stereotest I measures disparities: star 600, cat 400 and car 550 seconds of arc. In binocular vision stereoscopic shapes are recognised. No glasses are required meaning the patient's eye movements are easily observed



AKAS Cyber chart A20



- Diagnosis

Various Diseases with Multiple charts

- Durability

20,000 to 30,000 hours = 15 to 20 years LCD life.

- Aesthetics

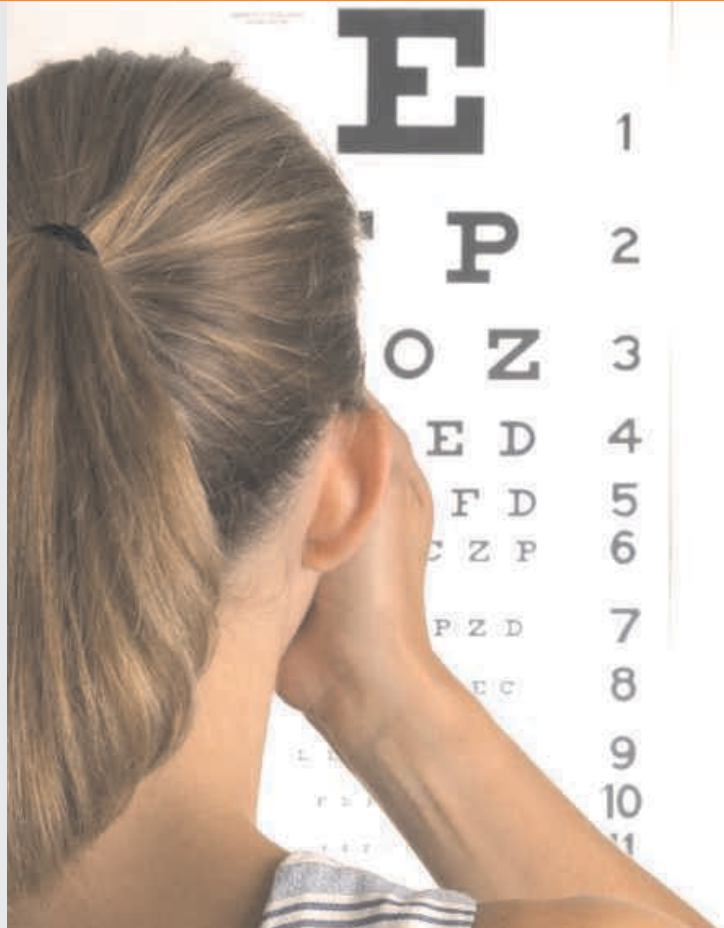
Slim and sleek in design,
Light weight,
Compact,
Attractive

- User friendly :

Picturized Remote Single Touch Chart selection,
Easy to mount,
Space saving

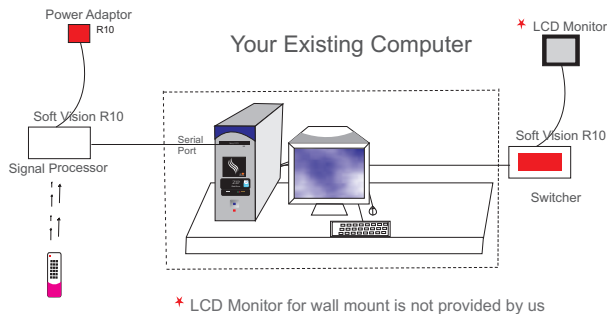
List of charts

- Landolt C Rings
- Red Green or Duochrome Balance
- Tumbling E
- Pediatric charts
- Number charts
- Illiterate Dots
- Alphabets
- Two Regional Languages
- Cross bar test
- Cross cylinder test
- LOGMAR
- Ishihara colour charts
- Vertical Coincidence
- Contrast Sensitivity with Pelli Robson and ETDRS formats
- Amsler Grid
- Peripheral Acuity
- Snellen Chart
- Astigmatism test
- Maddox test
- Worth four dot
- Street light driving test
- Phoria Test
- Educational and Counseling charts.



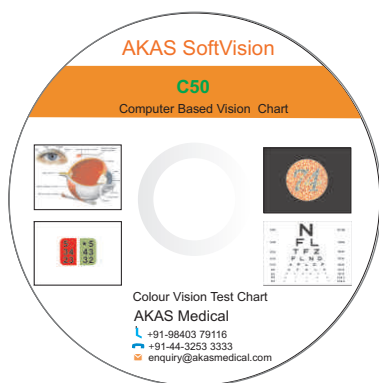
Computer vision chart

AKAS Soft vision - R10



- This is computer based Visual Acuity testing software, which can be installed in their Desk top or Lap Top. With the Remote Customer can select particular chart. This has three selectable distances and eleven selectable languages. This has choice of any monitor size.

AKAS Soft vision - C50



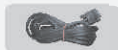
- This is computer based Visual Acuity testing software, which can be installed in their Desk top or Lap Top. With the remote Customer can select particular chart. This has three selectable distances and eleven selectable languages. This has choice of any monitor size.

Packing content

AKAS cyber chart A10



LCD vision chart system 1no



Power Chord 1no



Remote 1 no



User Manual 1 no



Key chart 1no

Product code : OPH OPD A10 AVS

AKAS Soft vision - C50



Software CD 2nos



USB lock 1no



Software Installation manual.

Product code : OPH OPD ASV C50

AKAS cyber chart - A20



LCD vision chart system 1no



Power Chord 1no



Remote 1 no



User Manual 1 no



Key chart 1no

Product code : OPH OPD AMU SCC

AKAS Soft vision - R10



Software CD 2nos



USB lock 1no



Software Installation manual.



Remote 1no



Remote control Signal processor.



Monitor sharer.



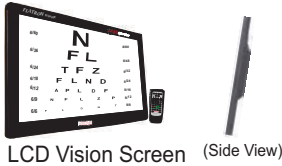
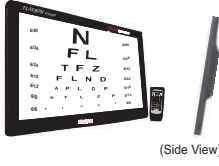
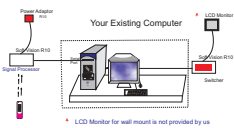

Serial port cable.



Power Adaptor

Product code : OPH OPD ASU R10

Visual Acuity Testing Equipment Comparison

Parameters	AKAS Cyber chart A-20	AKAS Cyber chart A-10	AKAS Soft vision R-10	AKAS Soft vision C50
Picture	 LCD Vision Screen (Side View)	 LCD Vision Chart (Side View)		
Product	LCD Vision Chart	LCD Vision Chart	Computer Based Vision Testing in CD	Computer Based Vision Testing in CD
Remote	Available	Available	Available	Not available
Chart Distances	One of the standard chart 6ft or 10ft or 20ft available	One of the standard chart 6ft or 10ft or 20ft available	All 3Standards 6ft, 10ft,20ft available	All 3Standards 6ft, 10ft,20ft available
Size	Sleet LCD Monitor wall mountable	Sleek LCD monitor wall mountable	Use with any computers / Laptop	Use with any computers / Laptop
Language available	English+3 regional language	English+3 regional language	11 language charts including English	11 language charts including English
Snellen Chart	Available in 4 Languages	Available in 4 Languages	Available in 11 Languages	Available in 11 Languages
Contrast sensitivity chart	Available	Not available	Available	Available
Colour Chart (ISIHRA)	Available	Duo chrome	Available	Available
Educational	1 chart can be(Added depends upon customer requirements)	1 chart *charges applicable	Multiple	Multiple
Operation	Only with the product	Only with the product	With any computer /Laptop	With any computer /Laptop
Wall Mountable Screen	Available	Available	Optional	Not available
Cost	Affordable	Normal	Low	Very low
Comfortability	Very High	Very High	High	Normal
Computer support	Not required	Not required	Required	Required
Computer system	Not required	Not required	Required	Required

Customer support

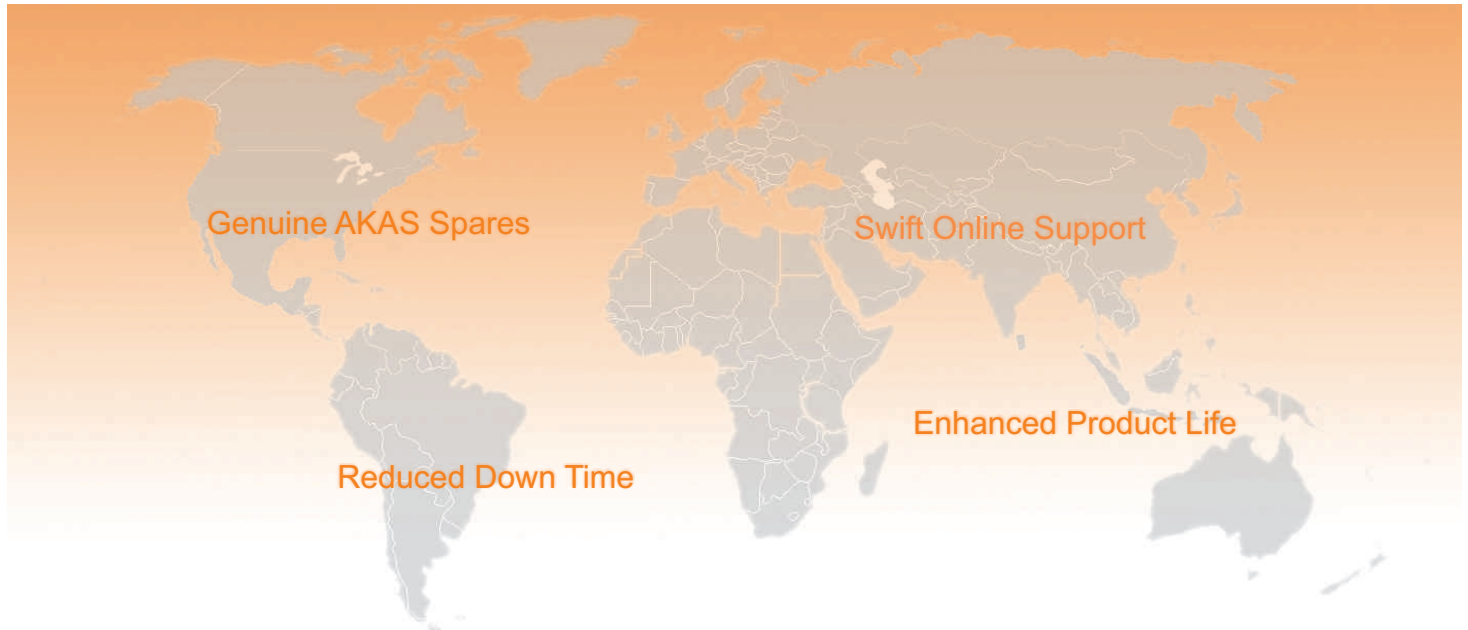


- We have well knit service network across the globe at Strategic locations. Our Service engineers undergo AKAS in-plant training course to enable quick and right support on field.
- Our customer care team is always available to clarify your queries on products and its operations or training as and when required.
- We constantly take up feed back from customers to evaluate our product performance and service support.

Contact ...

Cel : +91-98840 79116
Tel : +91-44-3253 3333
Fax : +91-44-2635 0030
support@akasmedical.com

Global Support



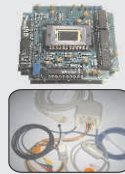
Service support Contact number is stuck on the rear side of the equipment for immediate reference.



Genuine Spares at economical Prices – from manufacturer's desk



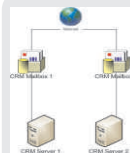
Service Directly from the Manufacturers desk



Genuine Spares available on demand



Factory trained Service engineers



CRM software for complaints registration and follow up

Ordering information

Please email for quote to enquiry@akasmmedical.com with the following information

First name,

Surname*

Title

Company

Position/Department

Address*

Telephone

Fax

E-mail*



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